

Docket No. 214278US0CONT



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8-7-03
R. Stiles

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

IN RE-APPLICATION OF: Minako ISHIKAWA, et al.

SERIAL NO: 09/976,435

GAU: 1755

FILED: October 15, 2001

EXAMINER:

FOR: FLUORINE-CONTAINING COMPOUND, AND WATER AND OIL REPELLENT COMPOSITION

INFORMATION DISCLOSURE STATEMENT UNDER 37 CFR 1.97

ASSISTANT COMMISSIONER FOR PATENTS
WASHINGTON, D.C. 20231

SIR:

Applicant(s) wish to disclose the following information.

REFERENCES

- ☐ The applicant(s) wish to make of record the references listed on the attached form PTO-1449. Copies of the listed references are attached, where required, as are either statements of relevancy or any readily available English translations of pertinent portions of any non-English language references.
- ☐ A check is attached in the amount required under 37 CFR §1.17(p).

RELATED CASES

- ☒ Attached is a list of applicant's pending application(s) or issued patent(s) which may be related to the present application. A copy of the claims and drawings of the pending application(s) is attached.
- ☐ A check is attached in the amount required under 37 CFR §1.17(p).

CERTIFICATION

- ☐ Each item of information contained in this information disclosure statement was first cited in a communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of this statement.
- ☐ No item of information contained in this information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application or, to the knowledge of the undersigned, having made reasonable inquiry, was known to any individual designated in 37 CFR §1.56(c) more than three months prior to the filing of this statement.

DEPOSIT ACCOUNT

- ☒ Please charge any additional fees for the papers being filed herewith and for which no check is enclosed herewith, or credit any overpayment to deposit account number 15-0030. A duplicate copy of this sheet is enclosed.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,
MAIER & NEUSTADT, P.C.


Norman F. Oblon

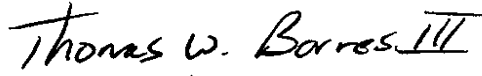
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LIST OF RELATED CASES

<u>Docket Number</u>	<u>Serial or Patent Number</u>	<u>Filing or Issue Date</u>	<u>Status or Patentee</u>
214278US0 CONT*	09/976,435	10/15/01	PENDING
223203US0 CONT	10/164,577	06/10/02	PENDING

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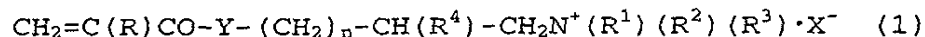
*Present Application; listed for information

WHAT IS CLAIMED IS:

1. A water repellent and oil resistant composition comprising the following fluorocopolymer (A), a non-fluorine surfactant (B), a medium (C) and the following
5 water-soluble polymer (D), as the essential components:

Water-soluble polymer (D): a water-soluble polymer selected from a polyacrylamide, a polyvinyl alcohol and starch;

- Fluorocopolymer (A): a copolymer comprising
10 polymerized units of a (meth)acrylate having a polyfluoroalkyl group, polymerized units of a vinylidene halide and polymerized units of a compound represented by the following formula (1):



- 15 provided that symbols in the formula (1) have the following meanings:

R: a hydrogen atom or a methyl group;

Y: an oxygen atom or a bivalent organic group;

- R¹, R²: each independently is a hydrogen atom or an
20 alkyl group, or they together form an alkylene group, or together form an alkylene group having an etheric oxygen atom between carbon-carbon;

R³: a hydrogen atom or an alkyl group;

R⁴: a hydrogen atom or a hydroxyl group;

- 25 n: 0, 1, 2, 3 or 4; and

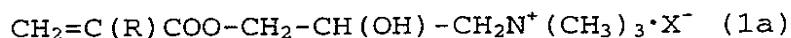
X⁻: a counter ion.

2. The water repellent and oil resistant composition
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DISCLOSURE
PURPOSES ONLY

Related Pending Application
Related Case Serial No: 10/164,577
Related Case Filing Date: 10-10-02

according to Claim 1, wherein the fluorocopolymer (A) is a copolymer polymerized by means of a lipophilic polymerization initiator (E) having a solubility of less than 3 g in 100 g of water.

- 5 3. The water repellent and oil resistant composition according to Claim 1, wherein the compound represented by the formula (1) is a compound represented by the formula (1a):



- 10 provided that R or X^- in the formula (1a) has the same meaning as in the formula (1).

4. The water repellent and oil resistant composition according to Claim 1, wherein in the fluorocopolymer (A), the polymerized units of a (meth)acrylate having a
15 polyfluoroalkyl group are from 30 to 80 mass%, the polymerized units of a vinylidene halide are from 15 to 60 mass%, and the polymerized units of a compound represented by the formula (1) are from 0.5 to 10 mass%.

5. The water repellent and oil resistant composition
20 according to Claim 1, wherein the non-fluorine surfactant (B) is at least one member selected from the following surfactant (b^1), the following surfactant (b^2), the following surfactant (b^3) and the following surfactant (b^4):

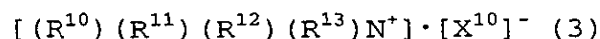
- 25 Surfactant (b^1): at least one nonionic surfactant selected from a polyoxyalkylene monoalkyl ether, a polyoxyalkylene monoalkenyl ether and a polyoxyalkylene

mono(substituted aryl) ether;

Surfactant (b²): a nonionic surfactant composed of a compound having at least one triple bond and at least one hydroxyl group in its molecule;

5 Surfactant (b³): a nonionic surfactant composed of a compound wherein polyoxyethylene moieties and moieties each having at least two oxyalkylene groups with at least three carbon atoms chained, are chained, and both terminals are hydroxyl groups; and

10 Surfactant (b⁴): a cationic surfactant represented by the following formula (3):



provided that symbols in the formula (3) have the following meanings:

15 R^{10} , R^{11} , R^{12} , R^{13} : each independently is a hydrogen atom, a C₁₋₂₂ alkyl group, a C₂₋₂₂ alkenyl group or a polyoxyalkylene group having a terminal hydroxyl group, provided that R^{10} , R^{11} , R^{12} and R^{13} are not simultaneously hydrogen atoms; and

20 $[X^{10}]^-$: a counter ion.

6. The water repellent and oil resistant composition according to Claim 1, wherein the medium (C) is a medium composed solely of water or a medium composed of water and a water-soluble organic solvent.

25 7. A substrate treated by means of the water repellent and oil resistant composition as defined in Claim 1.

8. A paper treated by means of the water repellent and

oil resistant composition as defined in Claim 1.

9. A method for treating a substrate, characterized by treating the substrate with the water repellent and oil resistant composition as defined in Claim 1, followed by
5 drying to remove the solvent (C) and to have the fluorocopolymer (A) attached to the substrate.

10. The treating method according to Claim 9, wherein the substrate is a paper.

ABSTRACT OF THE DISCLOSURE

A water repellent and oil resistant composition capable of imparting excellent water repellency and oil resistance to paper even under a condition of drying at a low temperature for a short time, is provided.

The composition comprising a fluorocopolymer (A) obtained by polymerizing a polyfluoroalkyl group-containing (meth)acrylate, vinylidene chloride and a compound of the formula $[\text{CH}_2=\text{C}(\text{R})\text{COO}-\text{CH}_2-\text{CH}(\text{OH})\text{CH}_2\text{N}^+(\text{CH}_3)^3 \cdot \text{X}^-]$ (R: a hydrogen atom or a methyl group, and X^- : a counter ion) or the like by means of a lipophilic polymerization initiator (E) having a solubility of less than 3 g in 100 g of water, a non-fluorine surfactant (B), a medium (C) and a water-soluble polymer (D) (a polyacrylamide, a polyvinyl alcohol or starch).